Test Review

Exponent Laws
Negative Exponents
Radicals
Graphing Exponential Growth/Decay
Solving Exponential Growth and Decay - Word Problems

p.444-445 q. 1-6,9,10,12
p. 446 q. 1-7

Test Wednesday May 23rd

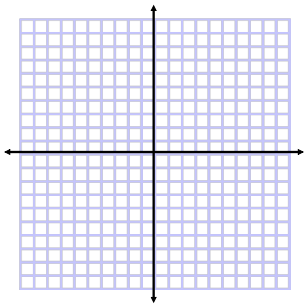
Dec 12-10:57 AM

Graph $y = 0.25^x$

List Horizontal Asymptote

Domain, Range

and 2 key pts for each exponential function



May 5-9:21 AM

Graph $y = 0.25^x$

List Horizontal Asymptote

Domain, Range

and 2 key pts for each exponential function

$y = 1/4^x$

x	y
0	1
-1	4
-2	16

$y = 0$

$\left(\frac{1}{4}\right)^{-1} \Rightarrow \left(\frac{4}{1}\right)^{1} \quad \left(\frac{1}{4}\right)^{-2} \quad \left(\frac{4}{1}\right)^{2} \Rightarrow 16$

$D = \{x \in R\}$

$R = \{y \in R \mid 0 < y\}$

May 5-9:21 AM

Graph $y = 0.25^x$

$y = 0.25^x$

$y = 0.25^{-1}$

$y = \frac{1}{0.25^1}$

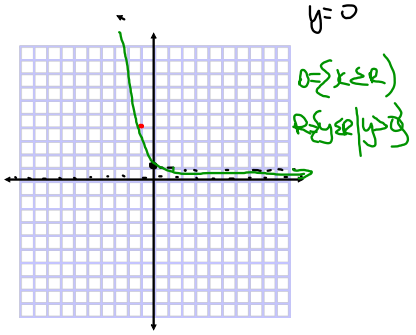
$y = \frac{1}{0.25}$

$y = 4$

$y = 0$

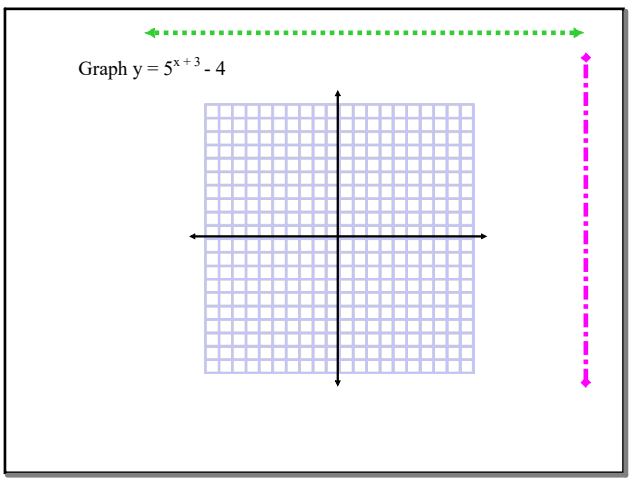
$D = \{x \in R\}$

$R = \{y \in R \mid y > 0\}$



May 5-9:21 AM

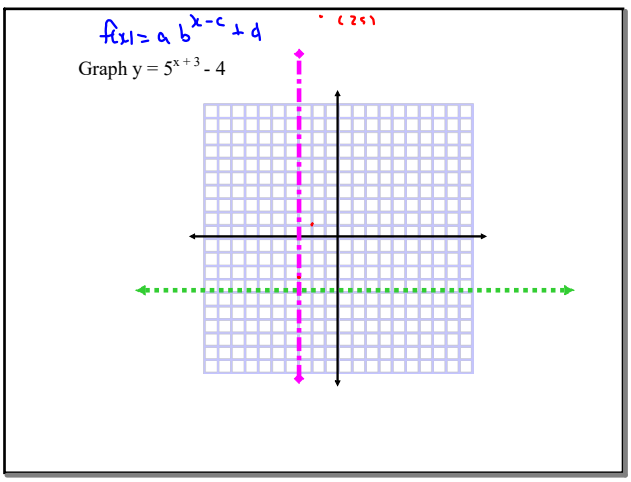
Graph $y = 5^{x+3} - 4$



May 5-9:21 AM

$f(x) = a\,b^{x-c} + d$

Graph $y = 5^{x+3} - 4$



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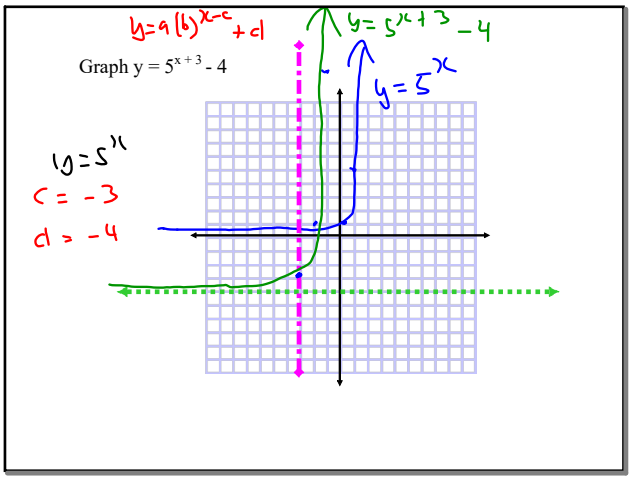

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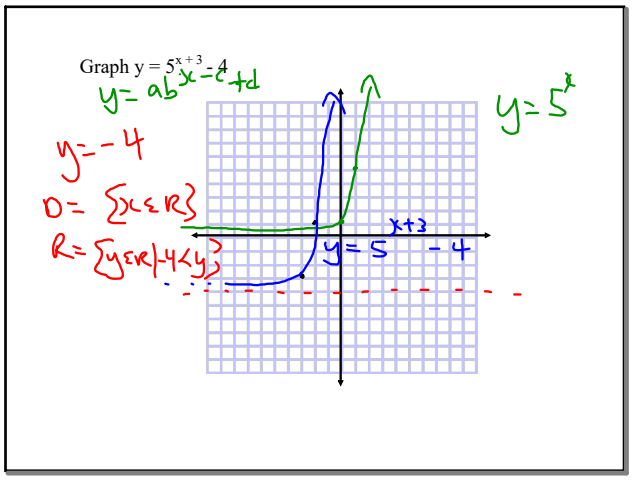

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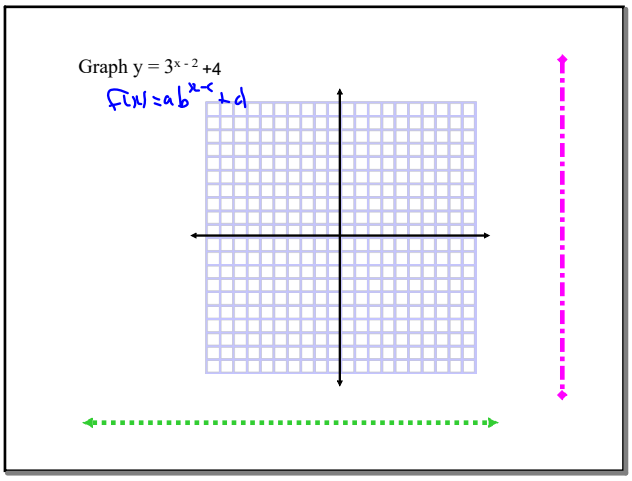

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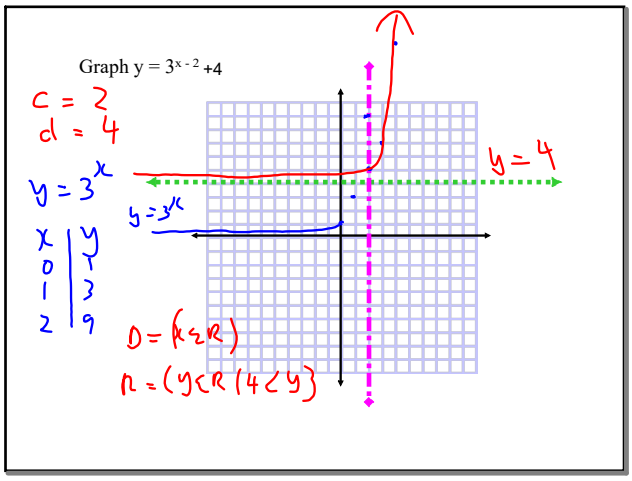

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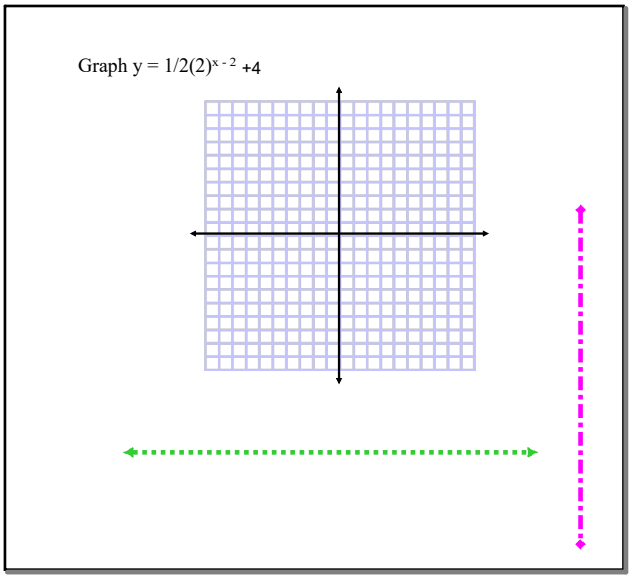

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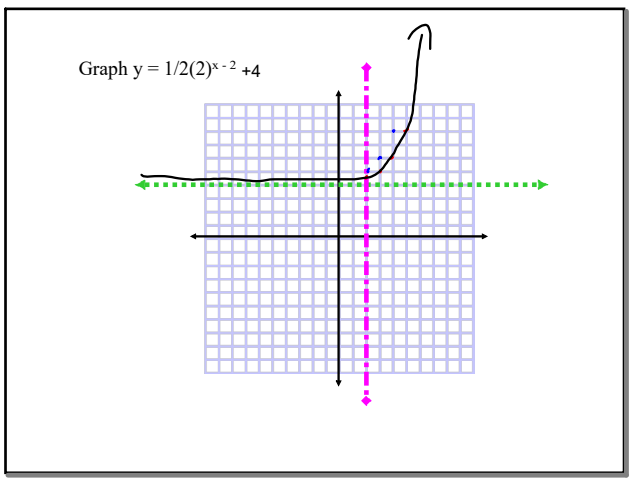
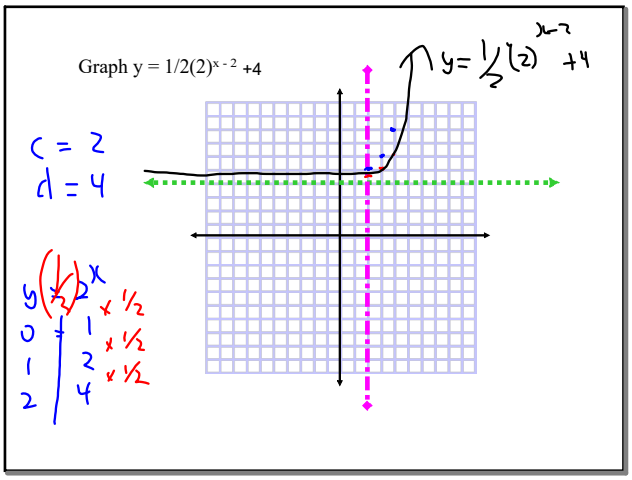


May 5-9:21 AM

Graph $y = 1/2(2)^{x-2} + 4$



May 5-9:21 AM

9. A biologist measures 1000 yeast cells in a culture at 12:00 noon. She predicts that, under current conditions, the culture should double every 50 min.
   a) Sketch a graph of the population of this culture for 200 min after noon.
   b) Use your graph to determine the population of the culture in 2.5 h.
   c) How can you adapt the graph to determine what the population of cells was 3 h *before* noon?

Dec 8-1:29 PM

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   c) How can you adapt the graph to determine what the population of cells was 3 h *before* noon?

$P(n) = P_{(0)}(1+r)^n$

$P(n) =$

$P(0) = 1000$

$r = 1.0$

$n = 200/50 = 4$

a) $= 1000(1+1)^4$

$1000(2)^4$

$= 1000(16)$

$= 16000$

b) 150 min $150 \div 50 = n = 3$

$1000(1+1)^3$

$1000(2)^3$

$= 8000$

c) $-180/50 = -3.6$

$= 1000(2)^{-3.6}$

$= 1000(0.08)$

$= 80$

0	1000
1	2000
2	4000
3	8000
4	16000

0	1000
50	2000
100	4000
150	8000
200	16000

$1000 \frac{1}{2^{3.6}}$

Dec 8-1:29 PM

9

graph 12:00 noon

$P(n) = P_{(0)}(1+r)^n$

$P(n) = P(0)(1-r)^n$

$P_{(0)} = 1000$

$r = 1.0$

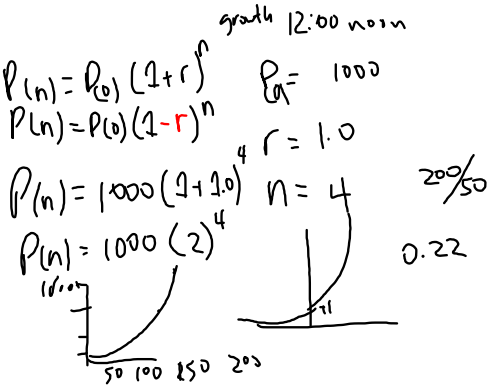
$P(n) = 1000(1+1.0)^4$

$n = 4$

$200/50$

$P(n) = 1000(2)^4$

0.22



$P(n) = 16000$

May 6-11:01 AM

14. Jerry invests $500 in a bond that pays 5% per year. He will need the money for college in 3 years.
   a) Write an equation that models the growth of the money.
   b) Use the equation to determine how much Jerry will have at the end of 3 years.
   c) How much money did his $500 earn in the 3 years?
   d) Jerry thinks that if he keeps his money invested for twice as long (6 years), he will earn twice as much. Is this true? Explain your reasoning.

Dec 8-1:29 PM

$P_{(n)} = P_{(0)}(1+r)^n$

$P_{(0)} = 500$ $= 500(1+0.05)^n$

$P_{(n)} = ?$ $= 500(1.05)^3$

$r = 0.05$ $= 500(1.157)$

$n = 3$ $= 578.81$ 78.81

$500(1.05)^6$

$500(1.340)$ 170.05

670.05

May 6-11:14 AM

1. Evaluate without using a calculator.

a) 5^{-3} c) $8^{\frac{1}{3}}$ e) -7^0

b) $\left(\frac{3}{4}\right)^{-2}$ d) $16^{-0.75}$ f) $100^{\frac{-3}{2}}$

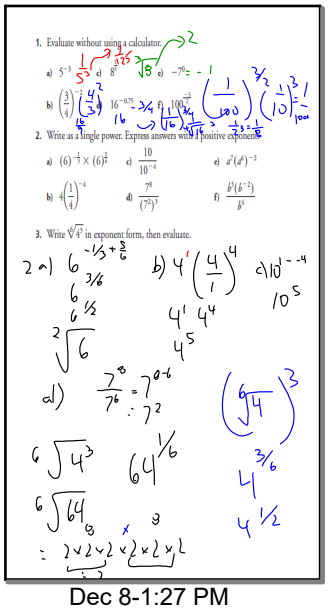
2. Write as a single power. Express answers with a positive exponent.

a) $(6)^{-\frac{1}{3}} \times (6)^{\frac{5}{6}}$ c) $\frac{10}{10^{-4}}$ e) $a^7(a^6)^{-2}$

b) $4\left(\frac{1}{4}\right)^{-4}$ d) $\frac{7^8}{(7^2)^3}$ f) $\frac{b^3(b^{-2})}{b^4}$

3. Write $\sqrt[6]{4^3}$ in exponent form, then evaluate.

Dec 8-1:27 PM



Dec 8-1:27 PM

b) $\left(\frac{3}{4}\right)^{-2}$ d) $16^{-0.75}$ f) $100^{\frac{-3}{2}}$

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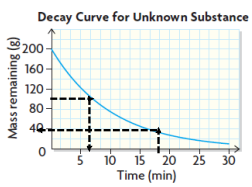
Dec 8-1:27 PM

7. The population of a small town has increased at a rate of 1.5% per year since 1980. The town had a population of 1600 that year.
   a) Write the equation that models the growth in population of the town. Describe each part of your equation.
   b) Use your equation to determine the population of the town in 2008.

Dec 8-1:27 PM

6. A lab has 200 grams of an unknown radioactive substance. The scientists in the lab measure the mass of the substance each minute and plot the curve shown.



a) How many grams of the substance remain after 18 min?
b) Use the graph to determine the half-life of the substance.

Dec 2-10:42 AM

Lesson 7.7

12. A police diver is searching a harbour for stolen goods. The equation that models the intensity of light per metre of depth is $I(n)=100(0.94)^n$.
   a) Describe each part of the equation.
   b) Determine the amount of sunlight the diver will have at a depth of 16 m, relative to the intensity at the surface.

Dec 3-10:39 AM

May 16-10:12 AM